generating the upper hierarchy data being a low resolution from the low hierarchy data being a high resolution, and wherein:

said generating step calculates, for each block of hierarchy data, an average of the pixel values having a number of n in a block to generate the upper hierarchy data; and

the upper hierarchy data being the average and the low hierarchy data composed of the pixels having the number of n-1 in a block corresponding to the average are output as the encoded data.--

--111. The picture encoding apparatus according to claim 52, wherein said determining means detects the quantization result of said upper hierarchy data by said quantizing means as said activity of said upper hierarchy data.--

--112. The picture transmitting method according to claim 72, wherein the determining step detects the quantization result of said upper hierarchy data by the quantizing step as said activity of said upper hierarchy data.--

--113. The picture encoding method according to claim 92, wherein the determining step detects the quantization result of said upper hierarchy data by the quantizing step as said activity of said upper hierarchy data.--

REMARKS

It is submitted that these claims, as originally presented, are patentably distinct over the prior art cited by the Examiner, and that these claims were in full compliance with the requirements of 35 USC 112. Changes to these claims, as presented herein, are not made for the purpose of patentability within the meaning of 35 USC sections 101, 102, 103 or 112. Rather,

these changes are made simply for clarification and to round out the scope of protection to which Applicants are entitled.

Claim 1 has been canceled herein. New claims 52-113 are in this application.

The present application is a continuation application of U.S. Patent Application Serial No. 08/959,051 filed October 28, 1997 which is a Continuation of U.S. Patent Application Serial No. 08/411,600 filed July 20, 1995 now U.S. Patent No. 5,767,986.

An Official Action issued March 19, 2001 in the parent '051 application. In this Official Action, claims 52, 53, 54, 55, 59, 60, 62, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 80, 82, 84, 86, 87, 88, 89, 90, 92, 93, 94, 95, 96, 99, 100, 102, 104, 106, 107, 108, 109, 110, 111, 112 and 113 were rejected under 35 U.S.C. 102(b) as being anticipated by Ericsson (U.S. 4,849,810).

It is respectfully submitted that independent claim 52 of the present application is distinguishable from Ericsson as applied by the Examiner in the March 19th Office Action (hereinafter, "Ericsson"), in that, Ericsson does not appear to specifically disclose "means for determining quantization characteristics of low hierarchy data being a resolution higher than that of upper hierarchy data being a low resolution, based on the activity of **only** said upper hierarchy data, in which the quantization characteristics of the low hierarchy data are different from the quantization characteristics of the upper hierarchy data", as in claim 52. (Underlining and bold added for emphasis.)

Accordingly, claim 52 is believed to be distinguishable from Ericsson.

Independent claims 72 and 92 of the present application are also believed to be distinguishable from Ericsson for similar reasons.

Claims 53-55, 59, 60, 62, 66-71, 73-75, 80, 82, 84, 86-90, 93-96, 99, 100, 102, 104, and 106-113 are dependent from one of independent claims 52, 72, and 92 and, due to such dependency, are also believed to be distinguishable from Ericsson for at least the above-described reasons.

In the March 19th Official Action, claims 56, 57, 58, 61, 63, 65, 76, 77, 78, 81, 83, 85, 96, 97, 98, 101, 103, and 105 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ericsson in view of Asamura et al. (U.S. 5,442,399).

Claims 56-58, 61, 63, 65, 76-78, 81, 83, 85, 96-98, 101, 103, and 105 are dependent from one of independent claims 52, 72, and 92 and, as such, respectively incorporate all of the above-described limitations contained therein. Therefore, claims 56-58, 61, 63, 65, 76-78, 81, 83, 85, 96-98, 101, 103, and 105 are also believed to be distinguishable from Ericsson for at least the above-described reasons. The Examiner cited Asamura apparently only in an attempt to meet the limitations of dependent claims 56-58, 61, 63, 65, 76-78, 81, 83, 85, 96-98, 101, 103, and 105 and not to overcome the above-described deficiency of Ericsson. Accordingly, claims 56-58, 61, 63, 65, 76-78, 81, 83, 85, 96-98, 101, 103, and 105 are believed to be distinguishable from such applied combination of Ericsson and Asamura.

It is to be appreciated that the foregoing comments concerning the disclosures in the cited prior art represent the present opinions of the applicants' undersigned attorney and, in the event, that the Examiner disagrees with any such opinions, it is requested that the Examiner indicate where, in the reference or references, there is the bases for a contrary view.

In view of the foregoing amendments and remarks, it is believed that all of the

claims in this application are patentable over the prior art, and early and favorable consideration thereof is solicited.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

Please charge any fees incurred by reason of this Supplemental Preliminary Amendment to Deposit Account No. 50-0320.

Respectfully submitted,

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"VERSION WITH MARKINGS TO SHOW CHANGES MADE."

IN THE CLAIMS

Cancel claim 1 without prejudice.

Please add the following new claims:

--52. A picture encoding apparatus for encoding inputted picture data to generate a plurality of hierarchy data being a plurality of resolutions which are recursively different, comprising:

means for determining quantization characteristics of low hierarchy data being a resolution higher than that of upper hierarchy data being a low resolution, based on the activity of only said upper hierarchy data, in which the quantization characteristics of the low hierarchy data are different from the quantization characteristics of the upper hierarchy data; and

means for quantizing each of the hierarchy data in accordance with said determined quantization characteristics of each hierarchy.--

--53. The picture encoding apparatus according to claim 52, wherein:

said quantizing means comprises first quantizing means for quantizing the upper hierarchy data being a low resolution in accordance with first quantization characteristics; and second quantizing means for quantizing the low hierarchy data being a high resolution in accordance with second quantization characteristics; and

said determining means determines said second quantization characteristics for the low hierarchy data being a resolution higher than that of said upper hierarchy data being a low resolution, in accordance with said first quantization characteristics.--

--54. The picture encoding apparatus according to claim 53, wherein said determining means determines, for each block of hierarchy data, a quantization step width for said low hierarchy data based on a quantization step width of said upper hierarchy data.--

--55. The picture encoding apparatus according to claim 53, wherein said determining means detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and determines a quantization step width of said low hierarchy data based on the distribution.--

--56. The picture encoding apparatus according to claim 55, wherein said determining means multiples the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a fixed value, so as to determine the quantization step width.--

--57. The picture encoding apparatus according to claim 55, wherein said determining means multiplies the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a linear weight, so as to determine the quantization step width.--

--58. The picture encoding apparatus according to claim 55, wherein said determining means multiplies the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a non-linear weight, so as to determine the quantization step width.--

--59. The picture encoding apparatus according to claim 53, wherein said determining means determines, for each block of hierarchy data, a quantization bit number of the

low hierarchy data being a resolution higher than that of said upper hierarchy data, in accordance with the quantization characteristics determined by the upper hierarchy data being a low resolution.--

--60. The picture encoding apparatus according to claim 59, wherein said determining means determines, for each block of hierarchy data, a quantization bit number of the low hierarchy data being a resolution higher than that of said upper hierarchy data, based on a quantization step width determined by the upper hierarchy data being a low resolution.--

--61. The picture encoding apparatus according to claim 60, wherein said determining means multiplies the quantization bit number of said upper hierarchy data by a value determined based on the quantization step width determined by said hierarchy data being a low resolution, so as to determine the quantization bit number of said low hierarchy data.--

--62. The picture encoding apparatus according to claim 59, wherein said determining means detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization bit number based on the distribution.--

--63. The picture encoding apparatus according to claim 62, wherein said determining means detects, for each block of the hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization bit number of said upper hierarchy data by a value determined based on the distribution, so as to determine the quantization bit number of said low hierarchy data.--

--64. The picture encoding apparatus according to claim 59, wherein said

determining means detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization bit number based on the distribution and a quantization step width determined by the upper hierarchy data being a low resolution.--

--65. The picture encoding apparatus according to claim 64, wherein said determining means detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization bit number of said upper hierarchy data by a value determined based on the distribution and the quantization step width determined by said hierarchy data being a low resolution, so as to determine the quantization bit number of said low hierarchy data.--

--66. The picture encoding apparatus according to claim 53, wherein:

said determining means determines, for each block of the hierarchy data, the quantization characteristics of said low hierarchy data based on history information regarding the determination of the quantization characteristics of said upper hierarchy data; and

said determining means determines a quantization step width of said low hierarchy data based on the history information regarding the determination of quantization step width of said upper hierarchy data.--

--67. The picture encoding apparatus according to claim 66, wherein said determining means detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization step width of said low hierarchy data based on the distribution and the history information regarding the determination of the

quantization step width of said upper hierarchy data.--

--68. The picture encoding apparatus according to claim 67, wherein said determining means detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization step width of said upper hierarchy data by the value determined based on the distribution and the history information regarding the determination of the quantization step width of said upper hierarchy data, so as to determine the quantization step width of said low hierarchy data.--

--69. The picture encoding apparatus according to claim 53, wherein each hierarchy data excepting data at the uppermost hierarchy is a hierarchy difference data which is a difference between the hierarchy data and the upper hierarchy data.--

--70. The picture encoding apparatus according to claim 53, further comprising means for generating the upper hierarchy data being a low resolution from the low hierarchy data being a high resolution, and wherein said generating means calculates, for each block of hierarchy data, an average of the pixel values having a number of n in a block to generate the upper hierarchy data; and the upper hierarchy data being the average and the low hierarchy data composed of the pixels having the number of n-1 in a block corresponding to the average are output as the encoded data.--

--71. The picture encoding apparatus according to claim 70, wherein each hierarchy data excepting data at the uppermost hierarchy is a hierarchy difference data which is a difference between the hierarchy data and the upper hierarchy data.--

--72. A picture transmitting method for encoding inputted picture data to

transmit a plurality of hierarchy data being a plurality of resolutions which are different recursively and transmitting the encoded data, said method comprising the steps of:

determining quantization characteristics of the low hierarchy data being a resolution higher than that of said upper hierarchy data being a low resolution based on the activity of only the upper hierarchy data, in which the quantization characteristics of the low hierarchy data are different from the quantization characteristics of the upper hierarchy data;

quantizing each hierarchy data in accordance with said determined quantization characteristics of each hierarchy and generating the encoded data; and

transmitting said encoded data.--

--73. The picture transmitting method according to claim 72, wherein:

said quantizing step comprises a first quantizing step of quantizing the upper hierarchy data being a low resolution in accordance with first quantization characteristics and a second quantizing step of quantizing the low hierarchy data being a high resolution in accordance with second quantization characteristics; and

said determining step determines said second quantization characteristics for the low hierarchy data being a resolution higher than that of the upper hierarchy data being a low resolution in accordance with said first quantization characteristics.--

--74. The picture transmitting method according to claim 73, wherein said determining step determines, for each block of hierarchy data, a quantization step width for said low hierarchy data based on a quantization step width of said upper hierarchy data.--

--75. The picture transmitting method according to claim 73, wherein said

determining step detects, for each block of hierarchy data, the distribution of a quantized value of said upper hierarchy data and determines a quantization step width of said low hierarchy data based on the distribution.--

--76. The picture transmitting method according to claim 75, wherein said determining step multiples the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a fixed value, so as to determine the quantization step width.--

--77. The picture transmitting method according to claim 75, wherein said determining step multiplies the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a linear weight, so as to determine the quantization step width.--

--78. The picture transmitting method according to claim 75, wherein said determining step multiplies the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a non-linear weight, so as to determine the quantization step width.--

--79. The picture transmitting method according to claim 73, wherein said determining step determines, for each block of the hierarchy data, a quantization bit number of the low hierarchy data being a resolution higher than that of said upper hierarchy data, in accordance with the quantization characteristics determined by the upper hierarchy data being a low resolution.--

--80. The picture transmitting method according to claim 79, wherein said

determining step determines, for each block of the hierarchy data, the quantization bit number of the low hierarchy data being a resolution higher than that of said upper hierarchy data, based on a quantization step width determined by the upper hierarchy data being a low resolution.--

--81. The picture transmitting method according to claim 80, wherein said determining step multiplies the quantization bit number of said upper hierarchy data by a value determined based on the quantization step width determined by said hierarchy data being a low resolution, so as to determine the quantization bit number of said low hierarchy data.--

--82. The picture transmitting method according to claim 79, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization bit number based on the distribution.--

--83. The picture transmitting method according to claim 82, wherein said determining step detects, for each block of the hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization bit number of said upper hierarchy data by a value determined based on the distribution, so as to determine the quantization bit number of said low hierarchy data.--

--84. The picture transmitting method according to claim 73, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization bit number based on the distribution and a quantization step width determined by the upper hierarchy data being a low resolution.--

--85. The picture transmitting method according to claim 84, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value

of said upper hierarchy data and multiplies the quantization bit number of said upper hierarchy data by a value determined based on the distribution and the quantization step width determined by said hierarchy data being a low resolution, so as to determine the quantization bit number of said low hierarchy data.--

--86. The picture transmitting method according to claim 73, wherein:

said determining step determines, for each block of hierarchy data, the quantization characteristics of said low hierarchy data based on history information regarding the determination of the quantization characteristics of said upper hierarchy data; and

said determining step determines a quantization step width of said low hierarchy data based on the history information regarding the determination of quantization step width of said upper hierarchy data.--

--87. The picture transmitting method according to claim 86, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization step width of said low hierarchy data based on the distribution and the history information regarding the determination of the quantization step width of said upper hierarchy data.--

--88. The picture transmitting method according to claim 87, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization step width of said upper hierarchy data by the value determined based on the distribution and the history information regarding the determination of the quantization step width of said upper hierarchy data, so as to determine the

quantization step width of said low hierarchy data.--

--89. The picture transmitting method according to claim 73, wherein each hierarchy data excepting data at the uppermost hierarchy is a hierarchy difference data which is a difference between the hierarchy data and the upper hierarchy data.--

--90. The picture transmitting method according to claim 73, further comprising the step of:

generating the upper hierarchy data being a low resolution from the low hierarchy data being a high resolution, and wherein:

said generating step calculates, for each block of hierarchy data, an average of the pixel values having a number of n in a block to generate the upper hierarchy data; and

said transmitting step transmits the encoded data corresponding to the upper hierarchy data composed of the average and the encoded data corresponding to the low hierarchy data composed of the pixels having the number of n-1 corresponding to the average.--

--91. The picture transmitting method according to claim 90, wherein each hierarchy data excepting data at the uppermost hierarchy is a hierarchy difference data which is a difference between the hierarchy data and the upper hierarchy data.--

--92. A picture encoding method for encoding inputted picture data to generate a plurality of hierarchy data being a plurality of resolutions which are different recursively, said method comprising the steps of:

determining quantization characteristics of the low hierarchy data being a resolution higher than that of said upper hierarchy data being a low resolution based on said

activity of only the upper hierarchy data, in which the quantization characteristics of the low hierarchy data are different from the quantization characteristics of the upper hierarchy data; and

quantizing each hierarchy data in accordance with said determined quantization characteristics of each hierarchy.--

--93. The picture encoding method according to claim 92, wherein:

said quantizing step comprises a first quantizing step of quantizing the upper hierarchy data being a low resolution in accordance with first quantization characteristics and a second quantizing step of quantizing the low hierarchy data being a high resolution in accordance with second quantization characteristics; and

said determining step determines said second quantization characteristics for the low hierarchy data being a resolution higher than that of the upper hierarchy data being a low resolution in accordance with said first quantization characteristics.--

--94. The picture encoding method according to claim 93, wherein said determining step determines, for each block of hierarchy data, a quantization step width for said low hierarchy data based on a quantization step width of said upper hierarchy data.--

--95. The picture encoding method according to claim 93, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and determines a quantization step width of said low hierarchy data based on the distribution.--

--96. The picture encoding method according to claim 95, wherein said determining step multiplies the quantization step width determined at said upper hierarchy based

on the distribution of said quantized value by a fixed value, so as to determine the quantization step width.--

--97. The picture encoding method according to claim 95, wherein said determining step multiplies the quantization step width determined at said upper hierarchy based on the distribution of said quantized value by a linear weight, so as to determine the quantization step width.--

--98. The picture encoding method according to claim 95, wherein said determining step multiplies the quantization step width determined at said upper hierarchy based on the distribution of said quantized value of a non-linear weight, so as to determine the quantization step width.--

--99. The picture encoding method according to claim 93, wherein said determining step determines, for each block of the hierarchy data, a quantization bit number of the low hierarchy data being a resolution higher than that of said upper hierarchy data, in accordance with the quantization characteristics determined by the upper hierarchy data being a low resolution.--

--100. The picture encoding method according to claim 99, wherein said determining step determines, for each block of the hierarchy data, the quantization bit number of the low hierarchy data being a resolution higher than that of said upper hierarchy data, based on a quantization step width determined by the upper hierarchy data being a low resolution.--

--101. The picture encoding method according to claim 100, wherein said determining step multiplies the quantization bit number of said upper hierarchy data by a value

determined based on the quantization step width determined by said hierarchy data being a low resolution, so as to determine the quantization bit number of said low hierarchy data.--

--102. The picture encoding method according to claim 99, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization bit number based on the distribution.--

--103. The picture encoding method according to claim 102, wherein said determining step detects, for each block of the hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization bit number of said upper hierarchy data by a value determined based on the distribution, so as to determine the quantization bit number of said low hierarchy data.--

--104. The picture encoding method according to claim 93, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization bit number based on the distribution and a quantization step width determined by the upper hierarchy data being a low resolution.--

--105. The picture encoding method according to claim 104, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization bit number of said upper hierarchy data by a value determined based on the distribution and the quantization step width determined by said hierarchy data being a low resolution, so as to determine the quantization bit number of said low hierarchy data.--

--106. The picture encoding method according to claim 93, wherein:

said determining step determines, for each block of hierarchy data, the quantization characteristics of said low hierarchy data based on history information regarding the determination of the quantization characteristics of said upper hierarchy data; and

said determining step determines a quantization step width of said low hierarchy data based on the history information regarding the determination of quantization step width of said upper hierarchy data.--

--107. The picture encoding method according to claim 106, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data to determine the quantization step width of said low hierarchy data based on the distribution and the history information regarding the determination of the quantization step width of said upper hierarchy data.--

--108. The picture encoding method according to claim 107, wherein said determining step detects, for each block of hierarchy data, the distribution of the quantized value of said upper hierarchy data and multiplies the quantization step width of said upper hierarchy data by the value determined based on the distribution and the history information regarding the determination of the quantization step width of said upper hierarchy data, so as to determine the quantization step width of said low hierarchy data.--

--109. The picture encoding method according to claim 93, wherein each hierarchy data excepting data at the uppermost hierarchy is a hierarchy difference data which is a difference between the hierarchy data and the upper hierarchy data.--

--110. The picture encoding method according to claim 93, further comprising

the step of:

generating the upper hierarchy data being a low resolution from the low hierarchy data being a high resolution, and wherein:

said generating step calculates, for each block of hierarchy data, an average of the pixel values having a number of n in a block to generate the upper hierarchy data; and

the upper hierarchy data being the average and the low hierarchy data composed of the pixels having the number of n-1 in a block corresponding to the average are output as the encoded data.--

--111. The picture encoding apparatus according to claim 52, wherein said determining means detects the quantization result of said upper hierarchy data by said quantizing means as said activity of said upper hierarchy data.--

--112. The picture transmitting method according to claim 72, wherein the determining step detects the quantization result of said upper hierarchy data by the quantizing step as said activity of said upper hierarchy data.--

--113. The picture encoding method according to claim 92, wherein the determining step detects the quantization result of said upper hierarchy data by the quantizing step as said activity of said upper hierarchy data.--